HAND TOOLS

Hand tools, in one form or another, are used in all occupations, and are designed to extend the range, strength, mobility, and effectiveness of a person's upper limbs. However, poorly designed tools or ergonomic risk factors, such as awkward positions, mechanical compression, vibration, and forceful exertions, can lead to injuries, accidents, and WMSDs. The duration of exposure to these risk factors may also affect the worker by increasing local and generalized fatigue and tissue stress.

Shortcomings in hand tool design are generally easy to identify, and can often be resolved by applying some basic principles outlined below.

- Use special purpose tools.
- Use lightweight, well-balanced, or counter-balanced tools.
- Use a tool balance, holder, or jig if prolonged use or holding is required.
- Use powered hand tools whenever possible.
- Use the best grip for the task (e.g., a "power grip" when high force is required).
- Use only tools that have the appropriate handle thickness, shape, and length for the job. In addition, the tool handle should--
    - Distribute the hand-force concentration over a greater surface area.
    - Be comfortable to hold and well rounded.
    - Reduce compressive forces on the land surface.
    - Be long enough to distribute forces over the large, fleshy areas at the base of the thumb and little finger.
- If a tool is used with gloves, choose a handle thickness, shape, and material to allow safe and comfortable use with the gloves.
- Use tools with compressible and nonconductive handles, and without sharp edges
- Select tools that minimize stress on muscles and tendons. You should be able to keep the wrist in a neutral or relaxed position during tool use.
- Allow for adequate finger clearance if trigger use is required, or increase the size of the trigger so more than one finger can be used.
- Allow for the hose connection of pneumatic tools to have a two-directional swivel.

- Cover power tool handles with vibration dampening material, such as Sorbothane®.
- Properly calibrate and maintain all tools.

The use of ergonomically designed hand tools significantly reduces the risk of WMSDs. Moreover, tools that fit in the hand comfortably will ultimately result in increased productivity. Refer to the “Vendor” section of this site for a list of manufacturers and vendors of ergonomic hand tools and devices.